

Attorney Docket No. 25341A

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

DEC 9 7 2007

In re Patent Application of:)
Jerry H. C. Lee et al.)
Serial No.: 10/826,207) Group Art Unit: 1794
Confirmation No. 1155)
Filed: April 16, 2004) Examiner: Matthew Matzek
For: Roof Coverings Having Improved)
Tear Strength)

DECLARATION OF JERRY H. C. LEE
UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Jerry H. C. Lee, hereby state as follows:

EXPERTISE IN FIELD OF ASPHALT-BASED ROOF COVERINGS

1. I am a co-inventor of the above-captioned patent application relating to asphalt-based roof coverings.
2. I received a B.S. degree in Chemical Engineering from National Cheng-Kung University in 1977, an M.S. degree in Chemical Engineering from Georgia Tech in 1981, and a Ph.D. degree in Chemical Engineering from Georgia Tech in 1985.
3. I have been employed by Owens Corning since April 15, 2002. During that time, I have been working as a size and fiber developer in the Integrated Material Science group and WUCS Innovation Lab. In this role, I have been responsible for developing advanced size chemistry and advanced glass fibers for asphalt-based roofing shingle and roofing mat applications.

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**UNEXPECTED TEAR STRENGTH IMPROVEMENT
BY ADDING SMALL AMOUNT OF ELEMENTAL SULFUR**

5. I performed the following set of experiments relating to the tear strength of roofing shingles. Roofing shingles were produced in which 3.46% RC-1 vinyl silane or Silfin 06 vinyl silane was added to the sizing formulation. One-half the roofing shingle samples had 0.2 wt% sulfur added to the coating asphalt. The roofing shingles were measured for tear strength and the following results were obtained. The cross-machine (CD) tear was measured using the procedures described in ASTM D 1922, and the total tear was the sum of the CD tear and the MD tensile which was measured using the procedures described in ASTM D 5035-90.

| <u>Sample</u> | <u>Shingle CD Tear</u> | <u>Shingle Total Tear</u> | <u>Notes</u> |
|---------------|------------------------|---------------------------|---|
| 5 | 1467 gm | 2614 gm | RC-1 vinyl silane alone |
| 6 | 1703 gm (+16%) | 2906 gm (+11%) | RC-1 vinyl silane plus 0.2 wt.% sulfur in asphalt |

| <u>Sample</u> | <u>Shingle CD Tear</u> | <u>Shingle Total Tear</u> | <u>Notes</u> |
|---------------|------------------------|---------------------------|--|
| 7 | 1498 gm | 2693 gm | Silfin 06 vinyl silane alone |
| 8 | 1789 gm (+19%) | 3002 gm (+11%) | Silfin 06 vinyl silane plus 0.2 wt.% sulfur in asphalt |

The data clearly show that a combination of a small amount of elemental sulfur added to the coating asphalt and a vinyl silane used in the sizing formulation significantly improve the tear strength of roofing shingles.

6. I am familiar with amended claim 9 of the present patent application, which recites from about 0.1% to about 5% by weight of elemental sulfur added to the asphalt-based coating material of a roof covering, and the fibers of a roofing mat of the roof covering coated with a sizing including a bonding material that bonds to the fibers and that also bonds to the added sulfur. The claim states that the tear strength of the roof covering is improved by at least about 5% as measured by ASTM D 1922 compared to the same roof covering without the bonding material in the sizing and the sulfur added to the coating material.

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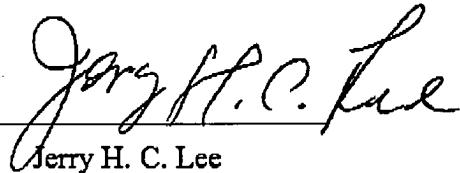
7. My professional opinion is that it was a surprising and unexpected result to achieve the significant improvements in tear strength shown in the experiments and recited in claim 9, as a result of the relatively small amounts of elemental sulfur added to the coating material used in the experiments and recited in claim 9. I would not have expected the addition of these small amounts of sulfur to produce the significant tear strength improvements.

CERTIFICATION AND OATH

8. I hereby declare that all statements made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the patent application or any patent issued thereon.

Date: 11/29/07

By



Jerry H. C. Lee